

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IL2004/000336

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G02B26/08 G02B26/10 B81B3/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B B81B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 197 28 598 A (BOSCH GMBH ROBERT) 4 February 1999 (1999-02-04) column 3, line 5 - line 20 column 4, line 39 - column 5, line 66; figure 1	1-18
X	DE 101 19 073 A (SCHNEIDER LASER TECHNOLOGIES A) 5 December 2002 (2002-12-05) paragraphs '0050! - '0054! figures 1,2	1-18
X	US 2001/055146 A1 (ATOBE MITSURO ET AL) 27 December 2001 (2001-12-27) paragraphs '0146! - '0148! paragraphs '0154!, '0155! figures 1,2	1-18
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \* & \* document member of the same patent family

Date of the actual completion of the international search

29 September 2004

Date of mailing of the international search report

13/10/2004

Name and mailing address of the ISA

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98/44571 A (XROS INC) 8 October 1998 (1998-10-08) page 19, line 5 - line 31 figure 13 -----	1-18
A	LUCENTE, M; ST. HILAIRE, P; BENTON, S; ARIAS, D.L.; WATLINGTON, J.A.: "New Approaches to Holographic Video" SPIE PROCEEDINGS OF HOLOGRAPHICS INTERNATIONAL '92, vol. 1732, July 1992 (1992-07), pages 377-386, XP002298455 BELLINGHAM, WA page 384, paragraph 3 - paragraph 5 -----	1-4
A	US 4 958 894 A (KHOWLES CARL H) 25 September 1990 (1990-09-25) column 2, line 34 - line 40 figure 4 -----	1-3

# INTERNATIONAL SEARCH REPORT

International Application No

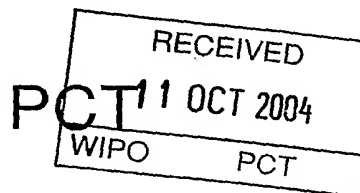
PCT/IL2004/000336

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 19728598	A	04-02-1999	DE 19728598 A1	04-02-1999
DE 10119073	A	05-12-2002	DE 10119073 A1	05-12-2002
			WO 02099504 A2	12-12-2002
			EP 1421429 A2	26-05-2004
			US 2004130765 A1	08-07-2004
US 2001055146	A1	27-12-2001	JP 9159937 A	20-06-1997
			JP 9236762 A	09-09-1997
			US 6271955 B1	07-08-2001
			US 6107115 A	22-08-2000
			US 2003016435 A1	23-01-2003
			US 5999306 A	07-12-1999
WO 9844571	A	08-10-1998	EP 1012890 A1	28-06-2000
			JP 2001519726 T	23-10-2001
			US 5969465 A	19-10-1999
			WO 9844571 A1	08-10-1998
US 4958894	A	25-09-1990	WO 9008363 A1	26-07-1990

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220



WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.  
PCT/IL2004/000336

International filing date (day/month/year)  
20.04.2004

Priority date (day/month/year)  
21.04.2003

International Patent Classification (IPC) or both national classification and IPC  
G02B26/08, G02B26/10, B81B3/00

Applicant  
ELOP ELECTRO-OPTICS INDUSTRIES LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. II    Priority**

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1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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**Box No. V    Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-18
Inventive step (IS)	Yes: Claims	
	No: Claims	1-18
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	

2. Citations and explanations

**see separate sheet**

Reference is made to the following document:

D1: DE 197 28 598 A (BOSCH GMBH ROBERT) 4 February 1999 (1999-02-04)

**1. Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- a. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document) a:

Geometric waveform oscillator (figure 1, #1) comprising

a plurality of masses (figure 1, #8, #9, #7), one of said masses comprising a mirror (figure 1, #7),

a force producing element (figure 1, #8, #9) coupled to one of said masses, said force producing element applying at least one force to at least one mass; and

a plurality of elastic elements (figure 1, #5, #6, #20, #21), said elastic elements coupling said masses (figure 1, #8, #9, #7) together and said elastic elements (figure 1, #5, #6) coupling at least one of said masses to at least one support (figure 1, #3, #4) wherein the masses and stiffnesses of the elastic elements, are selected such that the geometric waveform oscillator oscillates according to a predetermined waveform.

- b. The subject-matter of dependent claims 2 -18 is not new in the sense of Article 33(2) PCT either since the micro mechanical torsion mirror disclosed by document D1 comprises all features recited by the independent claim and these dependent claims. In particular, the non-sinusoidal waveform recited by dependent claim 2 is a feature of the torsion micro mirror known from document D1 (column 3, line 5 - 20) which can be torqued about two orthogonal axes.

2. Independent claim 1 does not meet the requirements of Article 6 PCT since it is not supported over the whole area claimed. The application discloses an micro electromechanical oscillating mirror, elastically and symmetrically coupled to two pairs of symmetrically distributed masses. A solution to the equation of motion is given for specific assumptions (symmetrical distribution of masses and stiffnesses) of equation 3 (page 9 of the application) only. Any broader scope is not supported by the description.
3. Claim 2 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the concrete technical features necessary for achieving this result. In particular, the wording "*wherein the mass values, ... the force value, ... and the stiffness coefficients ...are selected such that...*" leaves the choice of at least five parameters (two masses, one force and two stiffness values) to the reader.